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Chairman LaTourette, Ranking Member Brown, and other members of the Subcommittee, I am very pleased to be here today to testify, on behalf of the Secretary of Transportation, about the Federal Railroad Administration's (FRA) current safety regulations and rulemaking proceedings. My testimony will begin with an overview of how FRA is working daily to reduce both the number and the severity of railroad accidents. My testimony will then highlight the plan announced by the Secretary and FRA in May 2005, the National Rail Safety Action Plan, and FRA's real and substantial progress in bringing it to fruition, with special emphasis on safety rulemakings called for by the plan. Finally, I will touch on FRA's additional, new, passenger-safety rulemakings and other initiatives.

FRA's Railroad Safety Program

FRA is the agency of the U.S. Department of Transportation (DOT) charged with carrying out the Federal railroad safety laws. These laws provide FRA, as the Secretary's delegate, with very broad authority over "every area of railroad safety." 49 U.S.C. 20103(a). In exercising that authority, the agency has issued a wide range of safety regulations, which cover such topics as track, passenger equipment, locomotives, freight cars, power brakes, locomotive event recorders, signal and train control systems, maintenance of active warning devices at highway-rail grade crossings, accident reporting, alcohol and drug testing, protection of roadway workers, operating rules and practices, locomotive engineer certification, positive train control, and use of train horns at grade crossings. FRA currently has active rulemaking projects on a number of important safety topics, many of which will be described later in this testimony. In addition, FRA enforces in the rail mode of transportation the Hazardous Materials Regulations, which are promulgated by DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA).

FRA has an authorized inspection staff of about 400 persons nationwide, distributed across its eight regions. In addition, about 160 inspectors employed by the approximately 30 States that participate in FRA's State participation program inspect for compliance with the rail safety laws. Each inspector is an expert in one of five safety disciplines: Track; Signal and Train Control; Motive Power and Equipment; Operating Practices; or Hazardous Materials. In addition, FRA has 16 highway-rail grade crossing experts in the field. Every year FRA's inspectors conduct thousands of inspections, investigate more than 100 railroad accidents, investigate hundreds of complaints, develop recommendations for thousands of enforcement actions, and engage in a range of educational activities on railroad safety issues, including educating the public about highway-rail grade crossing safety and the dangers of trespassing on railroad property. FRA closely tracks the railroad industry's safety performance, and the agency uses this information to guide its accident prevention efforts and to strive continually to make

better use of the wealth of available data to achieve the agency's mission. FRA also sponsors collaborative research with the railroad industry to introduce innovative technologies to improve railroad safety. Finally, under the leadership of the U.S. Department of Homeland Security, FRA plays a supportive role in the Federal rail security effort.

The National Rail Safety Action Plan

As detailed in the appendix to my testimony, the railroad industry's overall safety record has improved during recent decades, and most safety trends are moving in the right direction. However, significant train accidents continue to occur, and the train accident rate has not shown substantive improvement in recent years. Moreover, several major freight and passenger train accidents in 2004 and 2005 (such as those at Macdona, Texas; Graniteville, South Carolina; and Glendale, California) have raised public awareness and specific concerns about railroad safety issues deserving government and industry attention.

On May 16, 2005, DOT and FRA launched an aggressive and ambitious National Rail Safety Action Plan to address these safety issues with the following strategy:

- Target the most frequent, highest-risk causes of train accidents;
- Focus FRA's oversight and inspection resources more precisely; and
- Accelerate research efforts that have the potential to mitigate the largest risks.

The Action Plan includes initiatives intended to--

- Reduce train accidents caused by human factors;
- Improve track safety;
- Enhance hazardous materials safety and emergency preparedness;
- Better focus FRA resources (inspections and enforcement) on areas of greatest safety concern; and
- Improve highway-rail grade crossing safety.

The causes of train accidents are generally grouped into five categories: human factors; track and structures; equipment; signal and train control; and miscellaneous. In the five years from 2001 through 2005, the great majority of train accidents resulted from human factor causes or track causes. In recent years, most of the serious events involving train collisions or derailments resulting in release of hazardous material, or harm to rail passengers, have resulted from human factor or track causes. Accordingly, human factors and track are the major target areas for improving the train accident rate.

Reducing Train Accidents Caused by Human Factors

Development of Rulemaking to Address Leading Causes of Human Factor Accidents

Accidents caused by human factors constitute the largest category of train accidents, accounting for 37 percent of all train accidents over the last five years. Some human factors are addressed squarely by FRA regulations. For example, FRA's regulations on alcohol and drug use by operating employees were the first such standards in American industry to incorporate chemical testing, and they have been very successful in reducing accidents resulting from substance abuse. FRA also has regulations on locomotive engineer certification, and FRA

enforces the hours of service restrictions, which are wholly governed by statute. However, FRA has been concerned that several of the leading causes of human factor accidents are not presently covered by any specific Federal rule, and they can have serious consequences. These leading causes include improperly lined track switches, leaving cars in a position that obstructs a track, and shoving rail cars without a person on the front of the move to monitor conditions ahead.

In May 2005, FRA asked its Railroad Safety Advisory Committee (RSAC) to develop recommendations for a new human factors rule to address the leading causes of human factor accidents. In February 2006, RSAC reported that good progress on a number of issues had been made; however, it was unable to reach a consensus recommendation. FRA thanked the members of RSAC for the guidance provided and has drafted a notice of proposed rulemaking targeted for publication later this year. As discussed in the RSAC, this regulation will address core railroad operating rules governing the handling of track switches, leaving cars in the clear, and "protecting the point" of shoving movements.

Meanwhile, in response to an increasing number of train accidents caused by hand-operated, main track switches in non-signaled territory being left in the wrong position and the potential for catastrophic accidents, FRA took action by issuing Emergency Order No. 24 in October 2005. This emergency order itself followed FRA's issuance of Safety Advisory 2005-01 in January 2005, immediately after an accident in Graniteville, South Carolina, which resulted in nine deaths from the breach of a tank car containing chlorine. The National Transportation Safety Board (NTSB) determined the probable cause of the Graniteville accident was the failure of a Norfolk Southern Railway Company train crew to return a main line switch to its normal position. Hours later, the next train to traverse the main track was misdirected onto the wrong track, where it collided with a standing train. This emergency order mandates that railroads retrain and periodically test employees on switch operating procedures and that railroads require increased communication among crewmembers and dispatchers regarding the proper positioning and locking of this type of switch. A switch position awareness form must be maintained by each employee operating a switch to record when the switch was operated and when it was returned to the normal position (i.e., typically lined for the main track). This emergency order is expected to remain in place until a final rule addressing the major causes of human factor accidents is promulgated and becomes effective.

Launch of "Close Call" Pilot Research Project

"Close calls" are unsafe events that do not result in a reportable accident but could have done so. FRA is working to better understand these phenomena. In March 2005, FRA completed an overarching Memorandum of Understanding (MOU) with railroad labor organizations and management to develop pilot programs to document the occurrence of close calls. In other industries, such as aviation, adoption of close-call reporting systems that shield the reporting employee from discipline (and the employer from punitive regulatory sanctions) has contributed to major reductions in accidents. In August 2005, FRA and DOT's Bureau of Transportation Statistics (BTS) entered into an MOU stipulating that BTS will act as a neutral party to receive the close-call reports and maintain the confidentiality of the person making the report. In October 2005, a contract to evaluate the close-call data was awarded to Altarum Institute of Alexandria, Virginia. Four railroads have expressed interest in taking part in this project. Educational efforts are under way to ensure that key stakeholders (local rail management and labor) at each potential site understand the purpose of the program and what would be required of them. Specifically, participating railroads will be expected to develop

corrective actions to address the problems that may be revealed. Aggregated data from these projects may also provide guidance for program development at the national level. An Implementing MOU involving the first site is under discussion, and data collection is expected to begin in the near future.

Identification of Technology to Improve Safety in Dark (Non-signaled) Track Territory

As previously mentioned, a leading cause of human factor train accidents is track switches that are improperly lined. A track switch that is improperly lined can divert a train onto the wrong track. An improperly lined track switch located on the main line in dark (non-signaled) territory led to the Graniteville accident.

In November 2005, FRA partnered with BNSF Railway Company in a $1 million Switch Point Monitoring System pilot project. The main objective of the project is to develop a low-cost system that electronically monitors, detects, and reports a misaligned switch on the main line track located in dark territory. Switch position monitoring units are now in place at 49 switch locations on the railroad's Avard Subdivision in Oklahoma. If a switch is left other than in the normal position, the dispatcher at the railroad's operations center is alerted, and corrective action is taken to protect train movements. A final report is expected in August 2006. Along with the planned human factor rule, this new switch monitoring system may prevent future train accidents such as the one at Graniteville.

Addressing Fatigue

Fatigue has long been a fact of life for many railroad operating employees, given their long and often unpredictable work hours and fluctuating schedules. Train crews may legally work an enormous number of hours in a week, month, or year. While commuter train crews often have some predictability in their work schedules, crews of freight trains rarely do. The long hours, irregular work/rest cycles, and lack of regular days off combine to have a very deleterious effect on employee alertness. Railroads are necessarily 24-hour businesses, and the effects of "circadian rhythms" challenge the alertness of even well-rested employees, particularly in the early morning hours. The hours of service law, originally enacted in 1907 and last substantially amended in 1969, sets certain maximum on-duty periods (generally 12 hours for operating employees) and minimum off-duty periods (generally 8 hours, or if the employee has worked 12 consecutive hours, a 10-hour off-duty period is required). However, the limitations in that law, although ordinarily observed, do not seem adequate to effectively control fatigue. Given the statutory nature of these parameters, however, FRA is not free to change them by rule.

FRA's knowledge of industry employee work patterns and the developing science of fatigue mitigation, combined with certain NTSB investigations indicating employee fatigue as a major factor, have persuaded FRA that fatigue is very likely at least a contributing factor in a significant number of train accidents and other railroad accidents caused by human factors. However, FRA's accident/incident data base rarely shows an occurrence as being the result of an employee's having fallen asleep, since making that determination after an event is very difficult. To obtain better information on the subject, FRA revised its own accident investigation procedures in 2004 so that FRA inspectors collect information on employees' sleep/rest cycles and evaluate fatigue as a factor.

As identified in the Action Plan, FRA is conducting applied research aimed at validating and calibrating a fatigue model that can be used to more precisely determine the role of fatigue in human factor-caused accidents and improve crew scheduling practices by evaluating the

potential for fatigue given actual crew management practices. When the model is properly validated, it will be made available to railroads and their employees as the foundation for developing crew scheduling practices based on the best current science. A final report is targeted for release in August 2006.

Improving Track Safety

Track-caused accidents are the second-largest category of train accidents, comprising 34 percent of all train accidents over the last five years. Some of the leading causes of track-caused accidents are very difficult to detect during normal railroad inspections. Broken joint bars, for example, are a leading cause, but the kinds of cracks in those bars that foreshadow a derailment-causing break are very hard to spot with the naked eye. Similarly, broken rails account for some of the most serious accidents, but the internal rail flaws that lead to many of those breaks can be detected only by specialized equipment.

Demonstration of New Technology to Detect Cracks in Joint Bars

FRA is developing an automated, high-resolution video inspection system for joint bars that can be deployed on a hi-rail vehicle to detect visual cracks in joint bars without having to stop the vehicle. In October 2005, a prototype system that inspects joint bars on both sides of each rail was successfully demonstrated. Testing showed that the high-resolution video system detected cracks that were missed by the traditional visual inspections. In 2006, the system is being enhanced with new developments to improve the reliability of joint bar detection and to add capabilities to include the Global Positioning System coordinates for each joint to facilitate future inspection and identification. Additionally, software is being developed and tested to scan the images automatically, detect the cracked joint bar, and then send a message to the operator with an image of the broken joint bar.

Requirements for Enhanced Capability and Procedures to Detect Track Defects

FRA is also addressing joint bar cracks on the regulatory front. On November 2, 2005, FRA published an interim final rule (IFR) requiring track owners to develop and implement a procedure for the detailed inspection of rail joints in continuous welded rail (CWR) track. Among other things, track owners must perform visual, on-foot, periodic inspections of joints in CWR track and keep records of these inspections. Further, track owners are required to identify joint bar cracks as well as to inspect for joint conditions that can lead to the development of these cracks. Based on the data that FRA will collect through implementation of this rule, FRA will establish a program to review data on cracks in joint bars. Finally, the IFR encourages railroads to develop and adopt automated methods to improve the inspection of rail joints in CWR track. This rulemaking is a direct result of a Congressional mandate in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and of NTSB recommendations arising out of various accidents involving cracked joint bars. Currently, FRA is reviewing public comments about this IFR in conjunction with the RSAC, and anticipates issuing a final rule later this year.

Deployment of Two Additional Automated Track Inspection Vehicles

Subtle track geometry defects, such as rails being uneven or too wide apart, are difficult to identify during a typical walking or hi-rail inspection. That is why FRA has developed automated track inspection and research vehicles to improve the ability to identify problems, and ensure they are repaired, before a train accident occurs. In May 2005, FRA added the T-18

vehicle to its fleet. Two more inspection vehicles with similar technology are currently being constructed (one that is self-propelled and one that is towed). They are expected to be delivered in September 2006 and January 2007. Once fully operational, they will allow FRA to inspect nearly 100,000 track-miles each year, three times as many as FRA currently inspects. This additional capability will permit FRA to inspect more miles of major hazardous materials and passenger routes, while also having the ability to follow up more quickly on routes where safety performance is substandard.

Improving Hazardous Materials Safety and Emergency Response Capability

The railroad industry's record on transporting hazardous materials is very good. The industry transports nearly two million shipments of hazardous materials annually, ordinarily without incident. However, the Graniteville accident in 2005, which alone involved nine deaths as the result of a chlorine release, demonstrates the potential for serious consequences from train accidents. The agency is actively engaged in a variety of activities intended to reduce the likelihood that a tank car may be breached if an accident does occur, complementing our effort to reduce the likelihood of train accidents. Realizing that we cannot prevent all accidents, FRA has developed initiatives to ensure that emergency responders will be fully prepared to minimize the loss of life and damage when an accident or release does occur.

Ensuring Emergency Responders Have Access to Key Information About Hazardous Materials Transported by Rail

Emergency responders presently have access to a wide variety of information regarding hazardous materials transported by rail. Railroads and hazardous materials shippers are currently subject to the hazard-communication requirements of the Hazardous Materials Regulations. In addition, these industries work through the American Chemistry Council's Transcaer® (Transportation Community Awareness and Emergency Response) program to familiarize local emergency responders with railroad equipment and product characteristics. PHMSA publishes the *Emergency Response Guidebook*, with the intention that it may be found in virtually every fire and police vehicle in the United States.

In March 2005, with FRA encouragement, the Association of American Railroads (AAR) amended its Recommended Operating Practices for Transportation of Hazardous Materials (Circular No. OT-55-H) to expressly provide that local emergency responders, upon written request, will be provided with a ranked listing of the top 25 hazardous materials transported by rail through their community. This is an important step to allow emergency responders to plan, and better focus their training, for the type of rail-related hazardous materials incident that they could potentially encounter.

In July 2005, again with FRA encouragement, CSX Transportation, Inc. (CSX), and CHEMTREC (the chemical industry's 24-hour resource center for emergency responders) entered into an agreement to conduct a pilot project to see if key information about hazardous materials on the train could be more quickly and accurately provided to first responders in the crucial first minutes of an accident or incident. The project is designed so that if an actual hazardous material rail accident or incident occurs, CHEMTREC watchstanders, who interact with emergency response personnel, will have immediate access to CSX computer files regarding the specific train, including the type of hazardous materials being carried and their exact position in the train consist. FRA is also working through the AAR to encourage the other major railroads to participate in a similar project.

Improving Tank Car Integrity through Research and Development

Prior to the August 2005 enactment of Section 9005 of SAFETEA-LU, FRA had initiated tank car structural integrity research stemming from the circumstances of the 2002 Minot, North Dakota, derailment, which resulted in one death from the release of anhydrous ammonia from a punctured tank car. FRA, in collaboration with the railroad industry through the AAR Tank Car Committee, is conducting research involving three major activities: (1) modeling of dynamic forces acting on tank cars in accidents and assessing the subsequent damage; (2) material testing to determine fracture behavior of tank car steels; and (3) risk ranking to prioritize the tank cars that are perceived to be most vulnerable to catastrophic failure. DOT's Volpe National Transportation Systems Center is doing the modeling work now, and FRA will dovetail this ongoing research with the requirements of Section 9005. The research was originally scheduled to be finished in 2008, and FRA has provided an additional $400,000 to move the target completion date forward to August 2007. This research will help provide the critical information necessary to guide an FRA rulemaking, also mandated by Section 9005, that will address the design of pressurized tank cars.

The first project, modeling of dynamic forces in train accidents, is ongoing and will assess items including train makeup, train speed, configuration of rail car pileup, the effect of having different types of impacting objects (i.e., couplers and wheels) strike different parts of various tank car models, and the effect of various levels of pressurization, among other elements. It is expected to be completed in August 2007.

The second project, material testing for dynamic fracture toughness, is testing the amount of stress required to propagate an existing flaw on the tank car steel and evaluating the ability of the steel to resist fracture. Researchers are testing 34 steel samples from tank cars, which have been sorted according to the decade in which they were manufactured (e.g., 1960s, 1970s, and 1980s). In February 2006, actual testing of the samples began at the Southwest Research Institute laboratories located in San Antonio, Texas. Testing is expected to be completed in August 2006.

The third project, ranking the vulnerability of hazardous materials tank cars to catastrophic failure, represents the end purpose of this research. Risk is a complex concept, and the methods used to rank the factors that affect risk vary in complexity. Preliminary low-level analyses are ongoing. Higher-level analysis can be conducted after the research on dynamic forces and testing for fracture toughness have been completed. The final hazardous materials tank car risk analysis is expected to be completed by September 2007.

In addition, FRA intends to evaluate an explosive-resistant coating that is being used to enhance the armor protection of military vehicles in Iraq for potential use on tank cars to reduce the likelihood of puncture. The material also has a self-sealing property that could be useful to seal a hole in a tank car and mitigate the severity of incidents.

Strengthening FRA's Safety Compliance Program

FRA continually seeks ways to direct its inspection and enforcement efforts toward the issues and locations most in need of attention. To this end, FRA instituted the National Inspection Plan (NIP), an inspection and allocation program that uses predictive indicators to assist FRA in allocating inspection and enforcement activities within a given region by railroad and by State. In essence, it makes use of existing inspection and accident data in such a way as to identify potential safety "hot spots" so they can be corrected before a serious accident occurs.

In April 2005, Operating Practices, Track, and Motive Power and Equipment became the first FRA safety disciplines to use the NIP since, combined, the corresponding accident causes (human factors, track, and motive power and equipment) account for about 84 percent of all train accidents. This was followed by the Signal and Train Control and Hazardous Materials disciplines in March 2006. A reduction in both the number and the rate of train accidents is expected once the NIP has had time to take its full effect and FRA refines its application in response to actual experience.

Fostering Further Improvements in Highway-Rail Grade Crossing Safety

Deaths in highway-rail grade crossing accidents are the second-leading category of fatalities associated with railroading. (Trespasser fatalities are the leading category.) The number of grade crossing deaths has declined substantially and steadily in recent years. However, the growth in rail and motor vehicle traffic continues to present challenges.

Issuance of Safety Advisory 2005-03

In May 2005, FRA issued Safety Advisory 2005-03, which describes the roles of the Federal and State governments and of the railroads in grade crossing safety. It also specifically reminds railroads of their responsibilities to report properly to FRA any accident involving a grade crossing signal failure; to maintain records relating to credible reports of grade crossing warning system malfunctions; to preserve the data from all locomotive-mounted recording devices following grade crossing accidents; and to cooperate fully with local law enforcement authorities during their investigations of such accidents. FRA also offers assistance to local authorities in the investigation of crossing accidents where information or expertise within FRA control is required to complete the investigation. FRA has extensively distributed this advisory through national law enforcement organizations and through contacts with local agencies.

In addition, FRA will work with the grade crossing safety community to determine appropriate responses to pedestrian fatalities at grade crossings. Earlier this year, the Transportation Research Board devoted an entire session of its annual meeting to pedestrian grade crossing safety issues in order to capture information on how to improve safety in this area. Later this year, FRA will publish a compilation of information on existing pedestrian safety devices currently being used in the Nation so that those making decisions on methods to improve pedestrian safety may have resource material available.

Assisting the State of Louisiana in Developing its Grade Crossing Safety Action Plan

In June 2004, Secretary Mineta issued an Action Plan for "Highway-Rail Crossing Safety and Trespass Prevention" that sets forth a series of initiatives in the areas of engineering, education, and enforcement to reduce and prevent highway-rail grade crossing accidents. In March 2005, FRA began working with the State of Louisiana in developing its own action plan for grade crossing safety. Louisiana has consistently been among the top five States in the Nation in the number of grade crossing accidents and deaths. The action plan focuses on reducing collisions between trains and motor vehicles at grade crossings where multiple collisions have occurred. After a delay resulting from last year's hurricane season, the State approved the action plan in April 2006.

Passenger Rail Safety Initiatives

While the National Rail Safety Action Plan focuses on improving the safety of freight railroad operations and grade crossings, FRA has also been making important progress during

the past year on the safety of railroad passengers. Let me summarize some of the agency's recent passenger rail safety initiatives.

Collision Hazard Analysis

"Collision Hazard Analysis" is a specific type of safety review that seeks to identify collision hazards and to develop reasonable solutions to address these collision hazards. "Collision hazards" include conditions and activities that increase the risk of collisions between trains or other on-track equipment, between trains and motor vehicles, etc. FRA strongly believes that the performance of a Collision Hazard Analysis will strengthen the system safety process on commuter railroads that grew out of the combined experience of the agency and the commuter railroads under Emergency Order No. 20.

Recently, FRA and DOT's Volpe National Transportation Systems Center partnered with the American Public Transportation Association (APTA) in an important pilot project regarding Collision Hazard Analysis. APTA worked in cooperation with FRA and the Volpe Center to train and serve as mentor to the team at Tri-Rail, the South Florida Regional Transportation Authority's commuter service, which volunteered to be the first commuter railroad to conduct this analysis. The pilot project with Tri-Rail provided an important opportunity to test FRA's Collision Hazard Analysis guide, which was published in draft form in December 2005.

The Tri-Rail project proved successful and serves as a model for all other commuter operators to follow to further improve upon their system safety programs. In fact, FRA just started working with Virginia Railway Express to perform such an analysis on its property. FRA strongly advocates that all commuter operators undertake a Collision Hazard Analysis, including New Start rail projects.

Report to Congress on Push-Pull Operations of Rail Passenger Trains

FRA is completing the congressionally mandated Report on the Safety of Push-Pull Passenger Rail Operations and anticipates releasing it in the near future. The report will provide a more comprehensive analysis of push-pull safety data and expand upon the critical passenger rail safety issues highlighted in the preliminary report that FRA issued last year.

Passenger Safety Rulemakings

FRA is hard at work on several rulemakings specifically designed to improve rail passenger safety. First, FRA intends to issue a notice of proposed rulemaking for new passenger rail safety standards to improve evacuation of passengers from trains, provide additional ways for rescuers to access the passenger car in case of an emergency, and enhance on-board emergency communication systems. This is the result of consensus recommendations from the RSAC. Second, FRA is working on a separate rulemaking through the RSAC on whether to incorporate certain APTA standards into FRA's regulations. The standards deal with emergency lighting, the marking of low-location exit paths, and emergency signage. Third, FRA is also preparing a proposed rule to implement the RSAC's recommendations on the end strength of cab cars.

Passenger Safety Research and Development

Crash Energy Management Systems

In March 2006, FRA successfully conducted the final in a series of full-scale passenger train crash tests at FRA's Transportation Technology Center in Pueblo, Colorado, to test new

crash energy management technology, a technology that FRA has been advancing for many years. In the final test, a passenger train that had been equipped with crush zones helped absorb the force of a crash, to better protect the spaces in the train occupied by passengers and train crewmembers. Other devices tested included newly designed couplers, which are built to retract and absorb energy in a collision, to help keep trains upright and on the tracks. Also tested were new passenger seats with special padding and new tables with crushable edges, to help prevent and mitigate passenger injuries. Using this integrated crash energy management technology is expected to save lives by more than doubling the speed at which all passengers are expected to survive a train crash.

Rollover Rig

In May 2006, FRA unveiled a state-of-the-art Passenger Rail Vehicle Emergency Evacuation Simulator, also known as a "Rollover Rig." It has the unique ability to roll a full-sized, commuter rail car up to 180 degrees, effectively turning it upside down, to simulate passenger train derailment scenarios. The Rollover Rig will enhance the ability of researchers to test strategies for evacuating passenger rail cars and evaluate the performance of emergency systems in the cars, such as emergency lighting, doors, and windows. In addition, emergency responders nationwide now have a unique training tool to practice effective passenger rescue techniques safely in various derailment scenarios. The Rollover Rig was developed by FRA at a cost of $450,000. The commuter rail car used by the simulator was donated by New Jersey Transit Rail Operations, and the Washington Metropolitan Area Transit Authority has agreed to house, operate, and maintain the simulator at its emergency-response training facility in Landover, Maryland.

Conclusion

FRA's approach to enhancing the safety of rail transportation is multi-faceted. In combination, the strategies for comprehensive safety assurance and hazard mitigation that I have discussed today are providing FRA with an effective and cost-based decision-making process to collect information that FRA believes will make rail operations safer for the public and the rail transportation industry. I look forward to discussing with the Subcommittee strategies and priorities for making our Nation's railroad system even safer.

APPENDIX

The Railroad Industry's Safety Record

The railroad industry's overall safety record is very positive, and most safety trends are moving in the right direction. While not even a single death or injury is acceptable, progress is continually being made in the effort to improve railroad safety. This improvement is demonstrated by an analysis of the Federal Railroad Administration's (FRA) database of railroad reports of accidents and incidents that have occurred over the nearly three decades from 1978 through 2005. (The low point of rail safety in recent decades was 1978, and 2005 is the last complete year for which data--though preliminary--are available.) Between 1978 and 2005, the total number of rail-related accidents and incidents has fallen from 90,653 to 13,751, an all-time low representing a decline of 85 percent. Between 1978 and 2005, total rail-related fatalities have declined from 1,646 to 895, the third-lowest number on record and a reduction of 46 percent. From 1978 to 2005, total employee cases (fatal and nonfatal) have dropped from 65,193 to 5,582, the record low; this represents a decline of 91 percent. In the same period, total employee deaths have fallen from 122 in 1978 to 25 in 2005, a decrease of 80 percent.

Contributing to this generally improving safety record has been a 71-percent decline in train accidents since 1978 (a total of 3,152 train accidents in 2005, compared to 10,991 in 1978), even though rail traffic has increased. (Total train-miles were up by 5 percent from 1978 to 2005.) In addition, the year 2005 saw only 36 train accidents, out of the 3,152 reported, in which a hazardous material was released, with a total of only 49 hazardous material cars releasing some amount of product, despite about 1.7 million movements of hazardous materials by rail.

In other words, over the last approximately three decades, the number and rate of train accidents, total deaths arising from rail operations, employee fatalities and injuries, and hazardous materials releases--all have fallen dramatically. In most categories, these improvements have been most rapid in the 1980s, and tapered off in the late 1990s. Causes of the improvements have included a much more profitable economic climate for freight railroads following deregulation in 1980 under the Staggers Act (which led to substantially greater investment in plant and equipment), enhanced safety awareness and safety program implementation on the part of railroads and their employees, and FRA's safety monitoring and standard setting (most of FRA's safety rules were issued during this period). In addition, rail remains an extremely safe mode of transportation for passengers. Since the year 1978, more than 10.7 billion passengers have traveled by rail, based on reports filed with FRA each month. The number of rail passengers has steadily increased over the years, and in 2005 there were more than 522 million. Twelve rail passengers were killed in train collisions and derailments in 2005, including ten that died in the Glendale tragedy. On a passenger-mile basis, with an average about 15.5 billion passenger-miles per year since the year 2000, rail travel is about as safe as scheduled airlines and intercity bus transportation and is far safer than private motor vehicle travel. Rail passenger accidents–while always to be avoided–have a very high passenger survival rate.

As indicated previously, not all of the major safety indicators are positive. Grade crossing and rail trespasser incidents continue to cause a large proportion of the deaths associated with railroading. Grade crossing and rail trespassing deaths accounted for 93 percent of the 895 total rail-related deaths in 2005. In recent years, rail trespasser deaths have replaced grade

crossing fatalities as the largest category of rail-related deaths, and last year was no exception. In 2005, 476 persons died while on railroad property without authorization, and 356 persons lost their lives in grade crossing accidents. Further, significant train accidents continue to occur, and the train accident rate per million train-miles has not declined at an acceptable pace in recent years. It actually rose slightly in 2003 and 2004 (to 4.04 and 4.36, respectively) compared to that in 2002 (3.76), although it dropped in 2005 (to 3.99). As stated in the main testimony, the causes of train accidents are generally grouped into five categories: human factors; track and structures; equipment; signal and train control; and miscellaneous. The great majority of train accidents are caused by human factors and track. In recent years, most of the serious events involving train collisions or derailments resulting in release of hazardous material, or harm to rail passengers, have resulted from human factor or track causes. Accordingly, the National Rail Safety Action Plan makes human factors and track the major target areas for improving the train accident rate.